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Patent Office

Ottawa, Canada
K1A 0G9

(21)	(A1)	2,032,012
(22)		1990/12/11
(43)		1991/06/12
(52)		222-7.2

5,075,2/26

(51) INTL.CL. ^S B67D-001/00

(19) (CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Syrup Delivery System

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(30) (US) 448,580 1989/12/11
(US) 493,728 1990/03/14

(57) 55 Claims

Notice: The specification contained herein as filed

Canada

CCA 3254 (10-88) 41

ABSTRACT OF THE DISCLOSURE

A syrup delivery system including a plurality of open-top, sturdy plastic containers and syrup bags. Each bag is positionable in a separate container with the bag spigot thereof extending accessible out through a container end opening. The open gridwork bottom of the container slopes to the container end opening so that the syrup in the bag can drain more completely out through the spigot with the container supported on a flat level surface. The containers have top locking posts, bottom stacking feet, and undulating-like sides. With the containers aligned so that their end openings face the same direction, the containers can be stacked one on top of the other with the posts of the bottom container engaging up into the feet of the top container. To unstack, the top container is tilted forward, the posts and feet thereby disengage, and the tilted top container easily slid down the sloping front lip of the lower container. To nest the containers, the top container is rotated 180 degrees about a vertical axis and the containers, due to their undulating sides, nest together in a relatively compact two-to-one nesting ratio. In the nested position the posts of the bottom container extend up into openings in horizontal support surfaces positioned mid-way up the sides of the top container.

SYRUP DELIVERY SYSTEM

BACKGROUND OF THE INVENTION

This is a continuation-in-part of copending application Serial No. 07/448,580, filed December 11, 1989.

The present invention relates to systems for delivering beverage syrups to fountain service customers. It further relates to boxes, containers or cases which when in a first relative position are stackable on top of one another and when in a second position are nestable in one another.

Today, most beverage syrups or post-mixes are shipped from the bottling plant to the fountain service customer in disposable, five gallon, multi-layered bags, packed in eight-inch by twelve-inch by sixteen-inch corrugated disposable boxes. The customer places the boxes on a special rack which tilts them for more thorough drainage. (On occasion, the racks are not used.) He tears open perforated areas on the boxes to expose spigots built into the bags and connects a line to the spigots to pump out the post-mix. A number of these bags can be hooked up in series and drained simultaneously. An example of this rack-box system is that available from Rudbar, Inc. of Mt. Vernon, New York.

There are many problems with these systems, however, and most of them derive from the corrugated box element. Not only are corrugated boxes becoming increasingly more expensive, they are generally not reusable. They must be disposed of by the customer, and these customers are often fast food franchisees who are under pressure to reduce the volume of their waste. These boxes occasionally collapse under static loads when palletized, and this collapsing problem is aggravated when the box becomes wet due to a leaking bag, inclement weather or wet environment. These boxes are also

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unsanitary since they can retain dirt and germs and attract bugs. The box forming machinery which folds and glues the boxes has also experienced problems in the past.

SUMMARY OF THE INVENTION

Directed to remedying these problems, a novel syrup delivery system is provided herein using neither racks nor corrugated boxes. Rather, it comprises a plurality of sturdy, reusable open-top boxes, which are stackable when full and nestable when empty. Each of the boxes has a working aperture at one end thereof defining a spigot end and out through which the spigot of a syrup bag held in the box is accessible. The inside bottom of the box is sloped towards the spigot end to aid drainage from the bag out its spigot. The boxes stack securely one on top of the other in a self-supporting arrangement and with their spigot ends facing the same direction. The bags can then be easily hooked in series since all of the spigots are on the same side of the stack, and racks are thus no longer needed. The top of the front spigot end of the box is sloped down to ease manual unstacking as when the stacked full boxes are to be unloaded off of a delivery truck. The delivery person need only tilt the top case or box forward slightly to unlock the locking feet and slide the box forward down the top lip of the box beneath it. When the boxes are empty and rotated so that their spigot ends are facing in opposite directions, they can nest one within the other with a relatively deep, two-to-one nesting ratio. In other words, they conveniently stack with like ends facing the same direction and nest with like ends facing in opposite directions.

Other objects and advantages of the present invention will become more apparent to those persons having ordinary skill in the art to which the present invention pertains from the foregoing description taken in conjunction with accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a syrup delivery system of the present invention.

Figure 2 is an enlarged perspective view of a container of the system of Figure 1, shown in isolation.

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Figure 3 is a side elevational view of the container of Figure 2.

Figure 4A is a front end view of the container of Figure 2.

Figure 4B is a view similar to that of Figure 4A of an alternative container of the present invention.

Figure 5 is a rear end view of the container of Figure 2.

Figure 6 is a top plan view thereof.

Figure 7 is a bottom plan view thereof.

Figure 8 is a perspective view showing the container of Figure 2 in a stacked relation with other similar containers.

Figure 9 is a view similar to that of Figure 8 showing the containers in a nested relation.

Figure 10 is a cross-sectional view taken along line 10-10 of Figure 6.

Figure 11 is a cross-sectional view taken along line 11-11 of Figure 6.

Figure 12 is a cross-sectional view taken along line 12-12 of Figure 6.

Figure 13 is a cross-sectional view taken along line 13-13 of Figure 6.

Figure 14 is a cross-sectional view taken along line 14-14 of Figure 11.

Figure 15 is a cross-sectional view taken along line 15-15 of Figure 7.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring to Figure 1, a syrup delivery system of the present invention is illustrated generally at 20. The system 20 basically comprises a plurality of similar or identical cases, containers or boxes shown generally at 22, a syrup bag 24 in each of the boxes and having a spigot 28 accessible through an aperture 28 at a front end 30 of the box, and hoses 32 connecting the spigots 28 in series. The box 22 has a unique construction such that when oriented with like ends facing the same direction, such as shown in Figures 1 and 8, the boxes stack securely when on top of the other and interlock with a stacking post arrangement, described in greater detail later, to prevent slipping

between the stacked boxes. However, when the boxes 22 are rotated such that vertically adjacent boxes are facing in opposite directions and the boxes are empty or nearly so, they will nest one within the other, as shown in Figure 9, in a compact arrangement for easy transport. The bottom floor 34 of the box 22 slopes down towards the working aperture end 30 of the box, as shown for example in Figure 11, to help the syrup bags 24 supported thereon to more completely and quickly drain out through their spigots 26. The open gridwork design of the bottom floor 34, as depicted in Figures 6 and 7, facilitates the rapid washing of the box 22 and the drainage of the wash water out therefrom without having to turn the box over.

Figures 2-4A, 5-7 and 10-13 show in isolation various views and sections of a box 22 of this invention. This box 22 is integrally molded of a suitable plastic, such as high-density polyethylene. It includes the front end wall 30, a rear end wall 36 (see Figure 8), a pair of opposing side walls 38, 40, and the bottom floor 34 secured therein, and it has an open top shown generally at 42. An outwardly projecting rim or lip 44 is provided along the top surfaces of the side and end walls. Upwardly recessed hand grips 46, 48 formed with the rim 44 centrally at the tops of both of the end walls 30, 36 assist in lifting and manipulating the box 22 or a stack of them. Both of the side walls 38, 40 are formed with serially arranged first and second panels 50, 52 forming an undulating-like cross-section (see Figure 13) through at least the upper halves thereof. There are the same number of first and second panels 50, 52 on each of the sides, the reasons for which will become apparent.

At the top of the first panels 50 and projecting up from the lip 44 are locking posts 54. At the bottoms of each of the first panels 50 are stacking feet 56 having bottom surfaces 58 projecting generally out from adjacent side wall structure and positioned a slight distance spaced above the bottom surface of the box 22 as can be seen, for example, in Figure 3, so they are less likely to be impacted and damaged. Recesses or slots 60 are formed up through the bottom surface 58 of the stacking feet 56 as can be seen in Figure 7, for example. Thus, with a pair of boxes 22 aligned with their working apertures 28

facing the same direction and one on top of the other, the posts 54 of the bottom box will be aligned with the slots 60 of the upper box and will fit up thereinto to lock the stacked boxes together, as is shown in Figures 1 and 8, to prevent sliding between them. Thus, each post-foot combination can be viewed as a modular unit. In this stacked arrangement, all of the working apertures 28 face in the same direction so that the spigots 26 can be connected in series with the hoses 32 as shown in Figure 1. Triangular bracing structures 62 brace the top of the stacking feet 56 against the side wall structure.

The second panels 62 have support structures 64 extending horizontally about mid-way along their height and shown in cross-section in Figure 14. The second panels 62 are stepped down and into the box 22 such that the top surfaces 66 of the support structures 64 are positioned inside of the box 22 and the lower surfaces 68 (Figure 7) are positioned on the outside. Thus with the top (or lower) box rotated end to end (180° about a vertical axis) such that the working apertures 28 of the two boxes are facing in opposite directions, the top box can nest within the lower box, as shown in Figure 9. The locking posts 54 of the lower box then will fit up into the slots 70 through the top support surface 68.

The working aperture 28 is formed with first and second openings 72, 74 wherein the first opening 72 is larger, generally rectangularly shaped and has rounded corners and the second opening 74 communicates with the first and defines an upwardly-disposed semi-circle, as shown in Figure 4A for example. Thus, the spigot 26 can be positioned out through the first opening 72 when the bag 24 is dropped into the box 22 and rest down into the second opening 74, as depicted in Figure 1. Figure 4B shows a front end view of an alternative box 22' of the present invention. The basic difference between box 22' and box 22 is the configurations of the working apertures 28' and 28, respectively. Aperture 28', as shown in Figure 4B, has a downwardly-pointed triangular shape with rounded corners. Corners 75a and 75b can have radii of .75 inch, while corner 75c can have a .55 inch radius, for example.

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The front portion 78 of the lip 44 along the front or working aperture end 30 of the box 22 is sloped downwardly as can be seen in Figures 3, 4A and 4B, for example. Similarly, the front corners 78 of the side wall vertical ribs 80 projecting up from the front stacking feet 88 are also radiused or rounded, as seen in Figures 2 and 3. Thus, to unstack the boxes when in their stacked position, as shown in Figures 1 and 8, the top box is simply tilted forward and the posts and feet thereby disengaged; the tilted top box is then easily slid down the sloping front lip 78 of the lower box. The projections or posts 54 closest to the front lip 78 preferably have a more rounded configuration as shown by reference numeral 82 than those more distant. The distant ones can either be preferably rounded (Figure 2) or can have a trapezoidal configuration (Figures 1, 8 and 9) as shown by reference numeral 84.

As seen for example in Figure 11, the bottom floor 34 has a front portion 86 which is generally flat adjacent the front end and a larger rear portion 88 sloping down towards the front portion 86. And as seen in Figure 6, the rear portion 88 defines a trapezoid in its top perspective view, funneling down towards the front portion 86. The portions 90, 92 of the floor 34 directly adjacent the side walls 38, 40 slope down to the other portions 86, 88 as seen in Figures 12 and 13, for example. The bottom floor 34 also has an open gridwork design, similar to that of known milk crates.

The design of the box 22 is such that it can be stretch wrapped or shrink wrapped when containing product (such as syrup bag 24) for sanitation, product identification or tamper evidence reasons without effecting the stacking or locking features thereof. The locking posts 54 maintain the shrink wrap (not shown) in place, and the shrink wrap does not interfere with the feet.

Unstacking loaded boxes 22 is easy with the box construction of this invention. As previously stated, the top box is tilted to unlock the stacking areas or locking posts 54 and then slid in the tilted orientation over the front lip 78 of the box below. The lugs or posts 24 and mating recesses are not slid off one another. The posts are shaped to

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locate into the recesses and to avoid presenting any sharp corners to the syrup bag 24 as it is dropped into the box 22.

From the foregoing detailed description, it will be evident that there are a number of changes, adaptations and modifications of the present invention which come within the province of those skilled in the art. However, it is intended that all such variations not departing from the spirit of the invention be considered as within the scope thereof as limited solely by the claims appended hereto.

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WHAT IS CLAIMED IS:

1. A syrup delivery system, comprising:
a first syrup bag having a spigot;
a first case having a first case end aperture;
first supporting means for supporting said first syrup bag in said first case such that said spigot thereof is accessible from outside of said first case through said first case end aperture and said first syrup bag slopes down to said spigot thereof;
a second syrup bag having a spigot;
a second case having a second case end aperture, said second case being stackable in a stacked position on and supported by said first case; and
second supporting means for supporting said second syrup bag in said second case such that said spigot thereof is accessible from outside of said second case through said second case end aperture and said second syrup bag slopes down to said spigot thereof.
2. The system of claim 1 wherein said first and second cases both have open tops.
3. The system of claim 2 wherein, with said first and second cases having said first and second syrup bags removed therefrom and said cases rotated relative to the other 180 degrees about a vertical axis thereof with respect to the stacked position, said second case fits down into said first case such that said cases are in a nested position.
4. The system of claim 1 wherein said syrup bags are separable and removable from their respective said cases, and said spigots extend through their respective said case apertures and to the exterior of their respective said cases with said syrup bags in said cases.
5. The system of claim 1 wherein said first and second cases include locking means for preventing slipping between first and second cases when in the stacked position.
6. The system of claim 5 wherein said locking means includes locking posts on upper surfaces of said first case and aperture means on lower surfaces of said second case, said aperture means

being configured so that corresponding said locking posts fit thereinto when said cases are in the stacked position.

7. The system of claim 1 wherein said first supporting means comprises a sloping floor connected to and in said first case.

8. The system of claim 7 wherein said sloping floor and said first case are integrally formed of plastic.

9. The system of claim 7 wherein said sloping floor is formed with an open gridwork design.

10. The system of claim 1 further comprising hosing operatively connected to said spigot of said first syrup bag and through which syrup from said first syrup bag can drain.

11. The system of claim 10 wherein said hosing is connected in series to said spigot of said second syrup bag.

12. A container comprising:

a floor structure; and

pairs of connected side and end walls connected to said floor structure and together therewith defining an open-top container, said side walls having inner and outer surfaces and top and bottom portions, said side walls having a plurality of spaced projections, at least one said inner and outer surfaces having between said top and bottom portions a plurality of spaced support structures;

wherein said projections and said support structures are positioned such that when a similar container is placed on said container in a first position a corresponding bottom portion of the similar container rests on said top portion such that the similar container and said container are in a stacked relation and when the similar container is placed in a second position, oriented end-to-end relative to the first position, on said container the projections of the similar container are positioned relative to said spaced support structures such that the similar container and said container are in a relative nested position.

13. The container of claim 12 wherein said side walls both comprise a series of serially arranged and alternating vertical first and second panel areas.

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14. The container of claim 12 wherein said support structures are disposed on said first panel areas and said projections are disposed on said second panel areas.

15. The container of claim 14 wherein both said side walls consist of equal numbers of said first and second panel areas, one said end wall is engaged at both ends thereof by said first panel areas, and the other said end wall is engaged at both ends thereof by said second panel areas.

16. The container of claim 15 wherein said second panel areas adjacent said ends of said other said end wall interconnect said ends with rounded corners.

17. The container of claim 14 wherein said first panel areas have upper and lower portions and said upper portions are disposed stepped outward relative to said lower portions.

18. The container of claim 17 wherein said support structures are disposed at the junctures of said upper and lower portions.

19. The container of claim 14 wherein said open-top container includes locking means, positioned generally at ends of said second panel areas, for preventing slipping between said container and the similar container when in the first position.

20. The container of claim 19 wherein said locking means includes locking posts on top of said second panel areas and corresponding locking post apertures on the bottom of said second panel areas.

21. The container of claim 20 wherein said open-top container includes an outwardly-projecting rim on and along top surfaces of said walls and said locking posts project up from said rim.

22. The container of claim 12 wherein said support structures have upper surfaces thereof disposed on said inner surfaces of said side walls.

23. The container of claim 12 wherein said support structures are positioned midway on the height of said side walls so that the second position defines a two-to-one nesting ratio for the containers.

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24. The container of claim 12 wherein one said end wall includes a working aperture therethrough.
25. The container of claim 24 wherein said open-top container includes a rim on top of said walls and sloping down to said one said end wall.
26. The container of claim 24 wherein said floor structure has its upper surface sloping relative to said walls and down to said one said end wall.
27. The container of claim 24 wherein said side walls adjacent said one said end wall have the bottom corners thereof being radiused.
28. The container of claim 24 further comprising a handle structure at the top of said one said end wall.
29. The container of claim 24 wherein said working aperture comprises a first opening and a second opening in said one said end wall smaller than said first opening and engaging a lower portion of said first opening.
30. The container of claim 29 wherein said second opening has an upwardly-disposed, semi-circular shape.
31. The container of claim 29 wherein said first opening has a generally rectangular shape.
32. The container of claim 24 wherein said working aperture defines a downwardly pointing triangle with rounded corners.
33. The container of claim 12 wherein said floor structure has an open gridwork construction.
34. The container of claim 12 wherein said side walls include stacking feet whose lowermost surfaces, when said container is resting directly on a generally flat support surface, are disposed a distance spaced above the support surface.
35. The container of claim 34 wherein the lowermost surface of the similar container defines the corresponding bottom portion.
36. The container of claim 12 wherein said open-top container includes an outwardly projecting rim on top of said side walls, said outer surfaces of said side walls include spaced recessed portions

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adjacent said rim, and said rim and said recessed portions define handle means for hand insertion therein, grasping and moving said container.

37. The container of claim 12 further comprising upwardly-disposed locking posts on top of said walls and bottom recessed structures defining downwardly disposed openings positioned and configured to receive up therein the locking posts of a similar container disposed directly below said container.

38. The container of claim 12 wherein said projections include upwardly disposed posts.

39. The container of claim 38 wherein said support structures have vertical openings therethrough and up through which the upwardly-disposed posts of the similar container extend when the similar container and said container are in the second position.

40. A container comprising:

a support floor;

pairs of side and end walls connected to said support floor, said side walls sloping downwardly and inwardly;

a plurality of spaced locking posts connected to and extending up from at least two said walls; and

a plurality of spaced stacking feet attached to lower portions of said side walls and projecting out therefrom, each said stacking foot having downwardly-opening structure constructed and configured to receive up therein a corresponding locking post of a similar container such that, when said container is stacked on the similar container, free slipping therebetween is blocked.

41. The container of claim 40 wherein said stacking feet, when said container is supported and resting on a generally flat support surface, have the bottommost surfaces thereof spaced a distance above the support surface.

42. The container of claim 40 wherein said stacking feet include bracing structures extending between an upper portion of said downwardly-opening structure and said side wall.

43. The container of claim 42 wherein said bracing structures comprise triangular members projecting perpendicularly out

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from said side walls and on top of said downwardly-opening structures.

44. The container of claim 40 wherein at least some of said locking posts each define upright trapezoids with rounded upper corners or upright semicircles.

45. The container of claim 40 wherein said locking posts are vertically-aligned with corresponding said downwardly-opening structures.

46. The container of claim 40 wherein each said stacking foot comprises a rib extending out from said one said side wall.

47. The container of claim 46 further comprising outwardly-projecting rims on top of said side walls, said locking posts extending up from said rims, and said ribs extending up and engaging said rims.

48. The container of claim 46 wherein said ribs engage bottom portions of said downwardly-opening structures.

49. A method of positioning first and second similar boxes relative to one another, said method comprising the steps of:

stacking the first box on the second box such that they engage on a plurality of box stacking posts;

thereafter, tilting the first box relative to the second box stacked therebeneath and thereby disengaging the box stacking posts; and

thereafter, sliding the disengaged first box in a tilted orientation down along a sloping lip of the second box and off the second box.

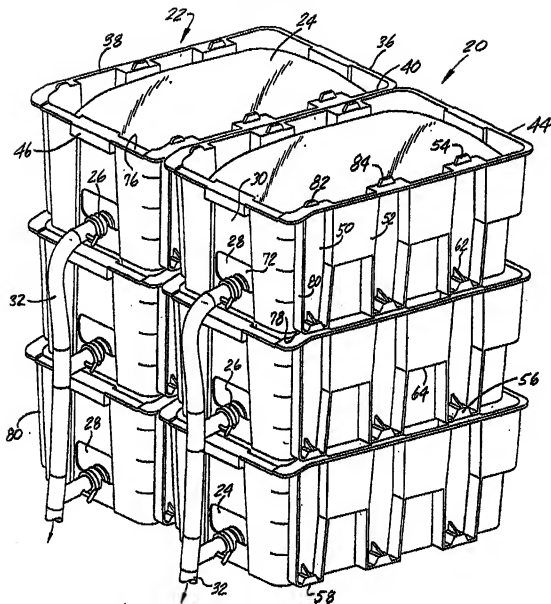
50. The method of claim 49 wherein the stacking posts are secured to the top of the second box, the first box includes a plurality of downwardly-opening stacking feet, and said stacking step includes engaging the stacking posts in the stacking feet.

51. The method of claim 49 further comprising, thereafter, reorienting the first and second boxes 180 degrees relative to one another about a vertical axis and nesting the reoriented boxes one within the other.

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52. The method of claim 51 wherein said nesting step includes nesting the boxes in a two-to-one nesting ratio.
53. The method of claim 51 further comprising, before said nesting step, removing the contents from the first and second boxes.
54. The method of claim 49 wherein said tilting includes tilting the first box on rounded side feet of the first box.
58. The method of claim 49 wherein said tilting and sliding steps are done manually.

FIG. 1



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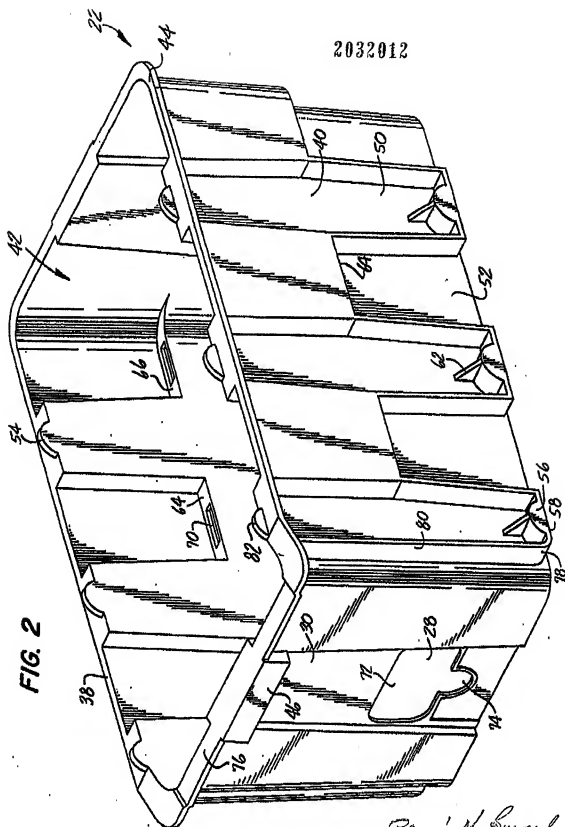
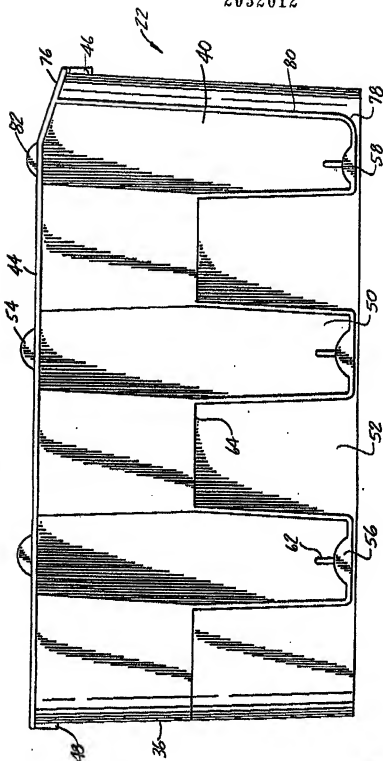


FIG. 2

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FIG. 3



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FIG. 4A

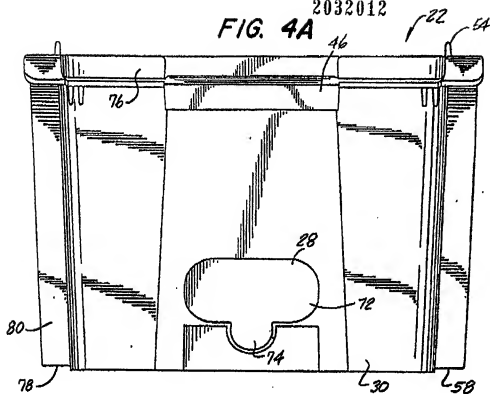
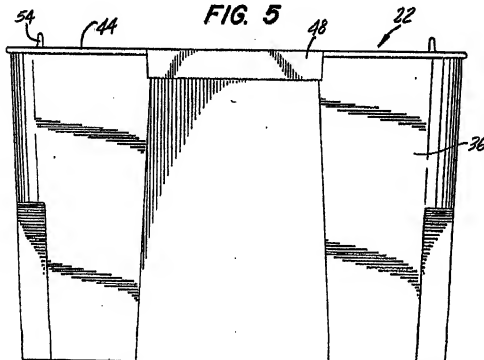
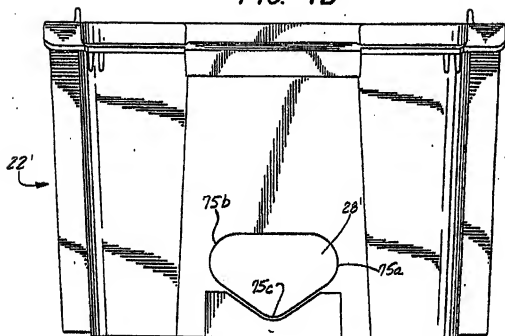


FIG. 5



Sim. 2: M. Gurnaf

FIG. 4B



Sim: M. Gurney

FIG. 6

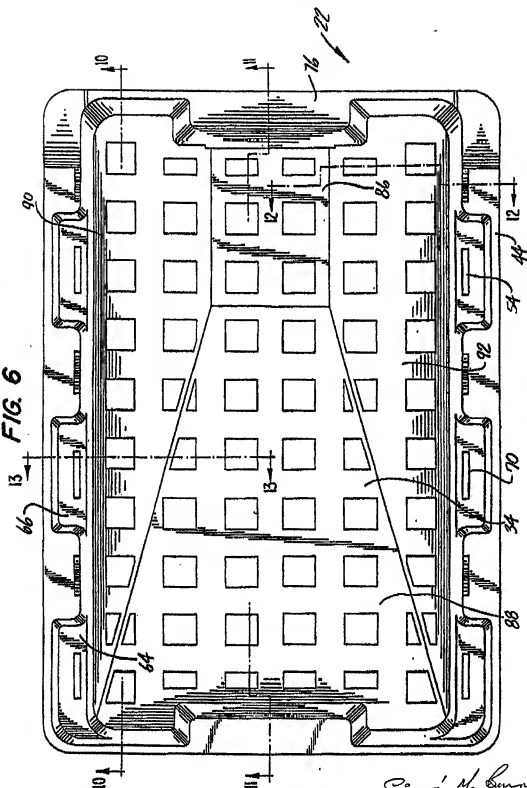
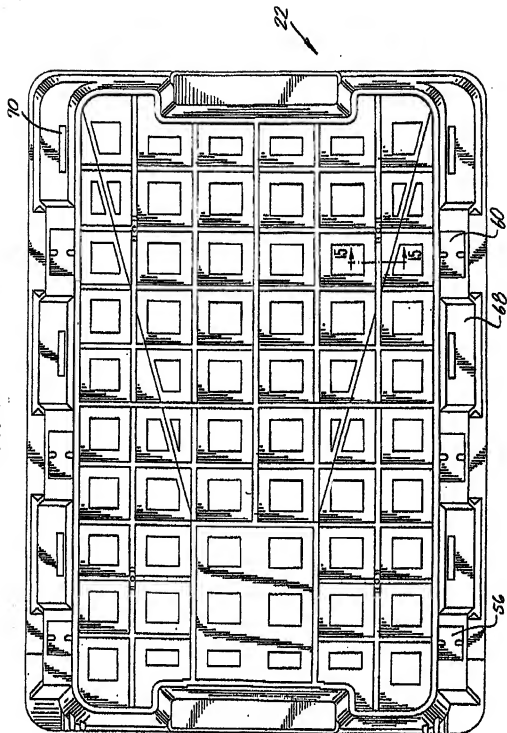
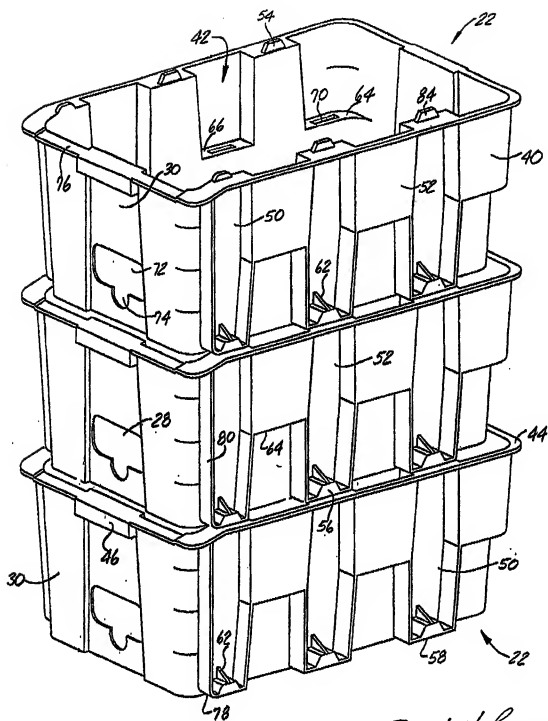


FIG. 7



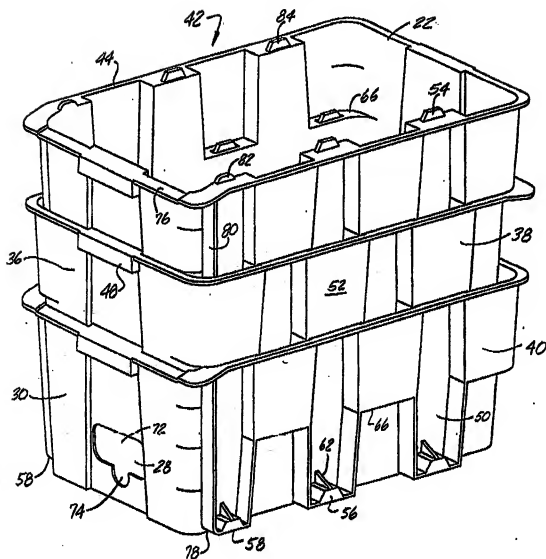
Sketch of Mr. Cunningham

FIG. 8



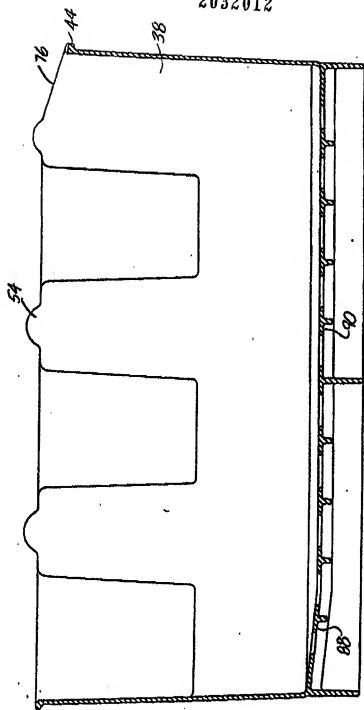
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FIG. 9



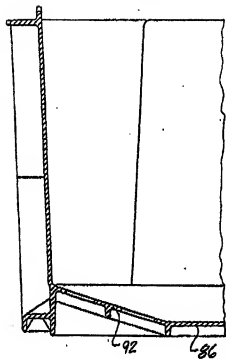
Sim. 3: M. Gurney

FIG. 10



Sime, J. M. Carroll

FIG. 12



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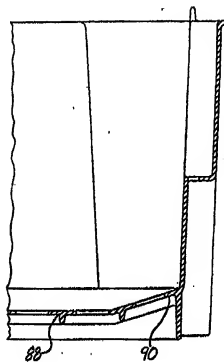


FIG. 14

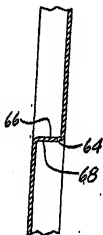


FIG. 15



Signed: *1/4. Gurney*

